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(Adopted _____, 2020___)

13-5-100 GENERAL

13-5-101 Description: The purpose of this Rule is to limit methane and organic compound emissions from petroleum refinery hydrogen systems.

13-5-102 Applicability: This Rule applies to petroleum refinery hydrogen systems including third-parties that produce hydrogen in hydrogen plants and are integrated into a petroleum refinery hydrogen system.

13-5-103 Exemption, Specific Operations: Specific Operations Sources of methane emissions already subject to methane emission requirements in Regulation 8 shall be exempt from this Rule.

13-5-104 Limited Exemption, Pure Hydrogen: Existing petroleum refinery hydrogen system atmospheric vents that exclusively emit pure hydrogen, defined for the purposes of this rule as a gas with a minimum hydrogen purity of 98 percent, by weight, as determined by an Air District approved hydrogen analyzer, or an Air District approved alternative method, shall be exempt from the requirements in Section 13-5-301 of this rule.

13-5-200 DEFINITIONS

13-5-201 Atmospheric Vent: An opening where a gas stream is continuously or periodically discharged during plant operations. Atmospheric vents include openings where gas streams are discharged directly to the atmosphere or are discharged to the atmosphere after being routed to a control device or a gas recovery device. For the purposes of this Rule, pressure relief devices, as defined in Air District Regulation 8: Organic Compounds; Rule 28: Episodic Releases from Pressure Relief Devices at Petroleum Refineries and Chemical Plants are not considered atmospheric vents.

13-5-202 Atmospheric Venting: Any release of methane or organic compounds to the atmosphere greater than 10 pounds per day from each vent from an existing petroleum refinery hydrogen system, subject to this Rule. Atmospheric venting does not include releases that are vented to vapor control equipment with at least 98 percent by weight capture and control efficiency.

13-5-203 Complete Capture: An integrated gas recovery system that reintroduces gas from the Petroleum Refinery Hydrogen System or Refinery Hydrogen Plant into the refinery fuel gas (RFG) system to prevent atmospheric venting of gas provided the Petroleum Refinery Hydrogen System or Refinery Hydrogen Plant is in compliance with Regulation 8, Rule 18: Equipment Leaks.

13-5-204 Emergency: A condition at a petroleum refinery beyond the reasonable control of the owner or operator requiring immediate corrective action to restore normal and safe operation that is caused by a sudden, infrequent and not reasonably preventable equipment failure, natural disaster, act of war or terrorism or external power curtailment,

excluding power curtailment due to an interruptible power service agreement from a utility.

13-5-205 **Existing Petroleum Refinery Hydrogen System.** A petroleum refinery hydrogen system built and operating prior to the adoption of this rule.

13-5-206 **Gas Recovery System:** Equipment that captures gases from plant operations during any operations including startups, shutdowns and malfunctions.

13-5-207 **Hydrogen Plant:** The process unit that produces hydrogen via steam hydrocarbon reforming, partial oxidation of hydrocarbons, shift conversion reactors, gas purification, catalytic oxidation or other processes.

13-5-208 **Malfunction:** As defined in Regulation 1: General Provisions and Definitions, Section 1-208. [Any unforeseeable failure or malfunction of any air pollution control equipment or operating equipment which causes a violation of any emission standard or limitation prescribed by District, California or federal rules, regulations or laws, where such failure or malfunction:
208.1 Is not the result of intent, neglect, or disregard of any air pollution control law, rule or regulation;
208.2 Is not the result of improper maintenance;
208.3 Does not constitute a nuisance;
208.4 Is not an excessively recurrent breakdown of the same equipment.]

13-5-209 **New Petroleum Refinery Hydrogen Plant.** A hydrogen plant built and operating after the adoption of this rule.

13-5-210 **Owner or Operator:** A representative of the facility or corporation who possesses sufficient authority to take actions required for compliance with this rule.

13-5-211 **Organic Compound:** As defined in Regulation 1: General Provisions and Definitions, Section 1-233. [Any compound of carbon, excluding methane, carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates and ammonium carbonate.]

13-5-212 **Petroleum Refinery:** As defined in Regulation 12: Miscellaneous Standards of Performance; Rule 12 Flares at Petroleum Refineries, Section 12-12-206. [A facility that processes petroleum, as defined in the North American Industrial Classification Standard No. 32411 and including any associated sulfur recovery plant.]

13-5-213 **Petroleum Refinery Hydrogen System.** A comprehensive petroleum refinery hydrogen operation including, but not limited to, all operations that produce refinery hydrogen, the hydrogen distribution system, including all compression operations, the hydrogen delivery system that delivers hydrogen streams to the process unit consumers, and any disposed, recycled or spent hydrogen streams (or “tail gas”) from the hydrogen consuming process units.

13-5-214 **Refinery Fuel Gas System:** A series of connected piping, valves and control systems from various process units that gather gaseous streams generated by refinery operations, and transports, treats and distributes the collected gaseous streams at suitable compositions and pressures for use as fuel in equipment such as boilers, furnaces, turbines or other combustion devices. Refinery fuel gas systems include gaseous streams that are collected separately, including flare gas recovery systems, or are otherwise routed to flares, oxidizers, or other abatement devices for destruction. Gaseous streams may contain a blend of methane, natural gas, light hydrocarbons, hydrogen and other miscellaneous organic, inorganic or inert gaseous species.

13-5-215 **Shutdown:** As defined in Regulation 12 Miscellaneous Standards of Performance; Rule 12 Flares at Petroleum Refineries, Section 12-12-210. [The intentional or unexpected

cessation of a petroleum refining process unit or a unit operation within a petroleum refining process unit due to lack of feedstock or the need to conduct periodic maintenance, replacement of equipment, repair or other operational requirements. A process unit includes subsets and components of the unit operation. Subsets and components include but are not limited to reactors, heaters, vessels, columns, towers, pumps, compressors, exchangers, accumulators, valves, flanges, sample stations, pipelines or sections of pipelines.]

13-5-216 **Startup:** As defined in Regulation 12 Miscellaneous Standards of Performance; Rule 12 Flares at Petroleum Refineries, Section 211. [The initiation of or preparation for operation of a petroleum refining process unit. A process unit includes subsets and components of the unit operation. Subsets and components include but are not limited to reactors, heaters, vessels, columns, towers, pumps, compressors and exchangers.]

13-5-300 STANDARDS

13-5-301 Complete Capture Requirements for Existing Petroleum Refinery Hydrogen System: An owner or operator of a petroleum refinery hydrogen system shall not vent to atmosphere hydrogen waste streams containing less than 98 percent hydrogen by weight. All petroleum refinery hydrogen gas waste streams must be controlled to 98 percent capture efficiency.

13-5-302 Complete Capture Requirements for New Petroleum Refinery Hydrogen Plant: An owner or operator of a petroleum refinery hydrogen plant built after the adoption of this rule shall not vent to atmosphere hydrogen waste streams containing less than 99.99 percent hydrogen by weight.

13-5-400 ADMINISTRATIVE REQUIREMENTS:

13-5-401 Gas Recovery Requirements for Existing Petroleum Refinery Hydrogen System: The owner or operator of a petroleum refinery hydrogen system shall comply with the following requirements:

401.1 Within one calendar year of adoption of this rule, submit a permit application to the APCO for an Authority to Construct and Permit to Operate of a gas recovery system designed for complete capture in compliance with Section 13-5-301 of atmospheric vent gas from some or all petroleum refinery hydrogen system operations during normal operation, startups, shutdowns, malfunctions and emergencies.

4012.2 Upon receiving an Authority to Construct from the Air District, the owner or operator of a petroleum refinery hydrogen system operation shall commence construction of a gas recovery system during the next scheduled turnaround; however, such construction shall begin no later than three years after the adoption of this rule.

401.3 Within one calendar year of commencing construction of a petroleum refinery hydrogen system gas recovery system, the owner or operator shall commence operation of the gas recovery system for complete capture in compliance with Section 13-5-301 of the atmospheric vent gas from some or all petroleum refinery hydrogen system operations.

13-5-402 Control Efficiency Requirements: With respect to any vent gas that is not completely captured in compliance with Section 13-5-401, the owner or operator of a petroleum refinery hydrogen system shall comply with the following requirements:

402.1 Within one calendar year of adoption of this rule, submit a permit application to the APCO for an Authority to Construct and Permit to Operate a gas abatement system designed to capture and control at least 98 percent of methane and

organic compound atmospheric vent gas, by weight, from all petroleum refinery hydrogen system operations.

402.2 Upon receiving an Authority to Construct from the Air District, the owner or operator of a petroleum refinery hydrogen system operation shall commence construction of a gas abatement system during the next scheduled turnaround; however, such construction shall begin no later than three years after the adoption of this rule.

402.3 Within one calendar year of commencing construction of a petroleum refinery hydrogen system gas abatement system, the owner or operator shall commence operation of the gas abatement system to capture and control at least 98 percent of the methane and organic compound atmospheric vent gas, by weight, from all petroleum refinery hydrogen system operations.

13-5-403 Reporting Requirements for Vented Hydrogen Gas from Existing Hydrogen System: Should an existing petroleum refinery hydrogen system vent gas to atmosphere after a gas abatement system becomes operational the owner or operator shall do the following:

403.1 Notify the APCO of the venting occurrence within three business days of the beginning of the occurrence if the control device operates at less than 98 percent efficiency. The owner or operator shall comply with the 98 percent control requirements in Section 13-5-402 within three business days upon discovery of the venting occurrence.

403.2 If notification to the APCO is required pursuant to Section 13-5-403.1, the owner or operator shall report the occurrence to the APCO as follows: the cause of the occurrence, the date and time of the occurrence, the duration of the occurrence, the make and model of the control device, the operating parameters of the control device including temperature, pressure, flow rate, concentrations of each constituent in the gaseous stream, and the mass emissions for each constituent in the gaseous stream including methane and organic compounds combined. The report is due within ten business days of the conclusion of the hydrogen gas venting occurrence.

13-5-404 Reporting Requirements for Vented Hydrogen Gas from New Hydrogen Plant: Should a new petroleum refinery hydrogen plant vent gas to atmosphere containing less than 99.99 percent hydrogen, by weight, the owner or operator shall do the following:

404.1 Notify the APCO of the venting occurrence within three business days of the beginning of the occurrence. The owner or operator shall comply with the 99.99 percent emission requirements in Section 13-5-302 within three business days upon discovery of the venting occurrence.

404.2 If notification to the APCO is required pursuant to Section 13-5-404.1, the owner or operator shall report the occurrence to the APCO as follows: the cause of the occurrence, the date and time of the occurrence, the duration of the occurrence, the make and model of the control device, the operating parameters of the control device including temperature, pressure, flow rate, concentrations of each constituent in the gaseous stream, and the mass emissions for each constituent in the gaseous stream including methane and organic compounds combined. The report is due within ten business days of the conclusion of the hydrogen gas venting occurrence.

13-5-500 MONITORING AND RECORDS

13-5-501 Recordkeeping Requirements: The owner or operator of any petroleum refinery hydrogen system shall:

501.1 Keep records of all petroleum refinery hydrogen system atmospheric venting, including mass emissions, duration, and gas composition, effective immediately upon compliance with Section 13-5-301 and Section 13-5-302.

501.2 Keep records of all petroleum refinery hydrogen system venting from control equipment, including mass emissions, duration, and gas composition, effective immediately upon compliance with Section 13-5-402.

501.3 Keep daily records of hydrogen purity verification if seeking limited exemption in Section 13-5-103.

501.4 Keep daily records of methane and organic compound mass emissions (combined) if seeking exemption from Section 13-5-403 requirements if emissions are less than 10 pounds per day.

All records shall be retained for five years and shall be submitted to the APCO upon request.

13-5-600 MANUAL OF PROCEDURES

13-5-601 Determination Control Efficiency: The control efficiency as specified in Sections 13-5-402, shall be determined by a method approved by the APCO and EPA in writing. A source shall be considered in violation if the methane or organic compound emissions measured by any of the referenced test methods exceed the standards of this rule.

13-5-602 Determination of Mass Emissions: The mass emission determination to verify applicability of Section 13-5-202 shall be made using a mass emission monitoring method approved by the APCO.

13-5-603 Determination of Hydrogen Purity: Owners or operators seeking the limited exemption in Section 13-5-104 for pure hydrogen shall use an APCO-approved analyzer or an APCO-approved alternative method to verify the purity of vented hydrogen on a daily basis. The owner or operator shall submit a plan to the APCO for approval of a hydrogen purity determination method at least 90 days prior to implementation.